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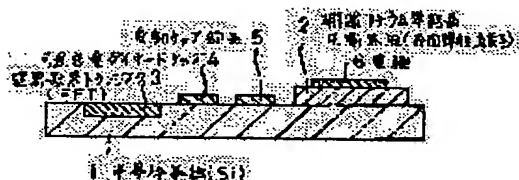
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## (54) ACOUSTOELECTRONIC INTEGRATED CIRCUIT AND MANUFACTURE THEREOF

(57)Abstract:

PURPOSE: To make a high-frequency device such as a voltage controlled oscillator small in size and light in weight and, to facilitate manufacture thereof by a method wherein a single-crystal lithium borate piezoelectric base having a surface acoustic wave element is joined directly to a semiconductor substrate.

CONSTITUTION: A single-crystal lithium borate piezoelectric base 2 joined directly onto an Si substrate 1 has a surface acoustic wave element such as a surface acoustic wave resonator on the surface. Each component on the Si substrate 1 and an electrode 6 of the surface acoustic wave resonator are connected by wirings so that they construct a voltage controlled oscillator. The lithium borate base 2 and the Si substrate 1 are joined directly and the voltage controlled oscillator thus integrated in one body is held in a hermetically sealed vessel. Since an oscillation circuit part and the surface acoustic wave resonator are integrated in one body in this way, attainment of miniaturization in a large degree is enabled and the surface acoustic wave resonator is made easily to be about 1/10 in volume and about 1/5 in weight of the one which is closed hermetically in a vessel and fitted discretely.



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